Joshua Lederberg

A Good Try Poses Problem

BESIDES radiation, our environment is laced with many chemicals suspected by geneticists of causing genetic damage. Many of these are synthetics, which the radical ecologist may insist on condemning out of hand without further thought of the economic consequences —and perhaps this is proper.

But our policy dilemmas may be brought into sharper focus when we think about natural products to which we have been accustomed for many years although we have no deeper understanding of their biological effects than we have about many synthetic additives.

SOME WEEKS ago, I read that the manufacturers of glue for hobbyists had determined to take some responsible initiatives to help control the glue-sniffing habit, even at the expense of their sales and profits. The Testor Corp. announced that it had perfected a denaturing additive, allyl isothiocyanate, that would not interfere with the proper use of plastic glues but would make sniffing intolerably spicy.

They also recommended that solvent manufacturers consider using the same material in a variety of other products with which disturbed youngsters have learned to poison themselves.

The safety of the denaturant was not brought into question. Under the common name of "mustard oil," it is (I learned on further inquiry) a food additive "generally regarded as safe" and so certified by the Food and Drug Administration on the basis of common-sense experience with mustard and horseradish, in which it is the active ingredient.

I HAVE a vivid recollection about a paper on mustard oil published in Nature magazine in 1944 by Prof. Charlotte Auerbach of the University of Edinburgh. That report 25 years ago was a small landmark in the history of genetics—the first authentic discovery of the production of mutations by a chemical substance.

Mustard oil caused a fivefold increase over the natural rate of occurrence of lethal mutations in the sperm cells of fruit flies. Dr. Auerbach commented on the significance of naturally occurring mutagens for biological evolution but not on their relationship to public health —perhaps for reasons of concern about civic alarm.

As far as I know, there has been no further genetic study of mustard oil, for many synthetic substances are more striking in their activity. The only work on its toxicology is a controversial claim that mustard in the diet causes high blood pressure.

ON BALANCE, I would not inveigh against the use of mustard oil as a substance to discourage sniffing. The very nature of its use will discourage its being taken in. Nor can one seriously propose an anti-horseradish campaign without attracting an unwarranted ridicule for more obviously serious concerns about additives.

But there is still a serious problem, for example, in the handling of mustard oil in quantity. Furthermore, we have to ponder whether a government agency can ever certify a compound as "safe" outside the context of actual experience and testing of it.

A proper test of mustard oil (and therefore of horseradish) for mutagenic effects in mice and in human cells will cost tens or even hundreds of thousands of dollars, and even that may not resolve all of our uncertainties. Other environmental insults need even more urgent attention. But we will be plagued by serious and inescapable doubts—even about horseradish—until we can properly attend to the thousands of products that we encounter in our daily life about whose biological effects we know next to nothing.

© 1969 The Washington Post Co.